

Air Force

Offering a brief look at the vital research and development contributions made by the Small Business Innovation Research (SBIR) Program in direct support of the Air Force mission.

# SBIR Advantage

4th  
Quarter  
2002



## Air Force SBIR Update

by Stephen Guilfoos  
Air Force SBIR Program Manager



## Program Changes: Process Enhancements, New Policy Directive, Topic Writing Improvement...

As the Air Force SBIR Program wraps up a very active and productive year we want to update you on a few important issues.

### **Tiger Team Reviewing SBIR Process Improvements**

A Tiger Team has been formed to look at process improvements in support of Program Executive Officers (PEO) and Designated Acquisition Commanders (DAC). The team has been tasked to

review the current process and to make recommendations in specific areas such as education, increased inclusion of System Program Officers (SPOs) throughout the SBIR selection and evaluation process, and improvement to encourage increased

[Continued on page 4...](#)

## SBIR Tech Issues

*Tech Issues* is intended for personnel directly involved in the operation and support of the AF SBIR program.

# Air Force Makes Leap Forward in Topic Approval Rates – Hats Off to Our Topic Authors.

During the past year the Air Force has realized a dramatic increase in the approval rate of the Air Force SBIR topics

that are reviewed by the DDR&E Topic Review process.

In FY 2001 about 33 percent (101 out of 309) of SBIR topics were approved by DDR&E in the first round of topic reviews. In FY 2002, the first round topic review saw

the approval rate jump to nearly 60 percent (174 out of 294). We experienced significant improvements in each of the six DDR&E review criteria. In the table above we've listed the frequency each criteria were not met during the first cycle review (note, a topic may not pass on one or more criteria).

Criteria	FY 01	FY 02
1 – not R&D .....	110	69
2 – not key technology .....	61	38
3 – not flexible .....	90	67
4 – no dual-use .....	64	15
5 – duplicate .....	36	13
6 – not clear .....	144	97
Overall Met.....	101	174
Overall not met.....	208	120

We attribute this significant improvement in large measure to our topic authors using our publication of "Helpful Hints for Writing SBIR Topics." This useful brochure guides topic writers through the process of crafting a sound topic. It's become obvious to the Air Force SBIR Management Team that our scientists and engineers are making an extra effort to write high-quality topics right from the start. In the past, our topic authors usually waited until the topic rewrite part of the process to inject topic quality.

We would like to recognize and thank all of our topic authors for the superb effort they put forth this year. This speaks volumes on the dedication our people bring to the program.

This 'how to' publication can be obtained on the Air Force SBIR Extranet site: <https://aftech.af.mil/sbir/index.htm>



Steve Guilfoos  
AF SBIR/STTR Program Manager

## SBIR Facts & Figures

### DoD SBIR Annual Report Summary for FY01

	SBIR Budget	# Topics	# Ph I Proposals	# Ph I Awards	# Ph II Awards
Army	136,376,000	239	2,055	281	180
Navy	128,625,000	192	1,798	241	136
Air Force	202,201,000	241	1,931	373	221
DARPA	44,983,642	36	315	82	53
DTRA	5,530,162	11	75	24	6
MDA	80,286,792	16	462	161	59
SOCOM	4,699,875	9	122	19	8
CBD	6,172,000	14	123	18	7
OSD	28,320,000	41	385	108	29
NIMA	970,000	2	26	2	3
All DoD	638,164,471	801	7,292	1,309	702

Source: DoD Annual Report summary.

## AF SBIR Impact

# SBIR Technology Improves Testing of GPS Receiver Equipment

## Air Force Requirement

The Air Force relies heavily on Global Positioning Systems (GPS) for meeting Air Force mission objectives. The proper maintenance and testing of airborne GPS receiver equipment is crucial. Stimulation and analysis testing of GPS receivers in laboratory conditions, with flexible GPS Radio Frequency (RF) simulators and Commercial Off-the-Shelf (COTS) personal computer (PC) based hardware, is viewed as vital to the continued support of fielded GPS equipment.

## SBIR Technology

Control Systems Research, Inc. (CSR) was awarded a Small Business Innovation Research (SBIR) contract to apply PC-based instrumentation and 3-D technologies to the process of GPS receiver testing. CSR's real-time Windows 2000™ Visualization and Blanking Tool (VBT) system combines Digital Elevation Terrain Data (DETD) with aircraft solid object models. This combination of systems provides scientists and engineers the ability to investigate the effects

of signal masking or blanking on GPS receiver performance. Coupled with the visualization system is the PC-based Simulation Communications Translator (SCT) real-time instrumentation system. The SCT system provides a central control for all hardware-in-loop control and data capture functions to a satellite constellation simulator and GPS receivers. Included is the ability to create motion trajectories from waypoint, joystick or external files. Combined, the VBT and SCT systems allow GPS Environmental Simulators the capability to stimulate, record and analyze GPS receiver performance to a greater fidelity than ever before while using standard COTS hardware and custom application software in a cost-effective package.

## Air Force Payoff

The systems CSR developed helps the Air Force control, log, and reduce the message traffic between GPS satellite simulators and GPS User Equipment (UE) as well as to provide 3-D GPS coverage visualization. The 3-D coverage allows an analyst to create virtual test



environments (i.e. real-world terrain, fuselage, and inertial effects) to investigate masking of RF signal sources (satellites, pseudolites, and jammers) on GPS UE performance.

## Technology Transfer/Commercialization

CSR has recently adapted and licensed these products to support a commercial manufacturer of RF signal generators. There are numerous applications for this technology including aircraft, space, land, weapons and RF propagation requirements.

## SBIR Partner

Control Systems Research, Inc.  
Crestview, Fla.

## Employees

14



**"The systems CSR developed will enhance Air Force GPS UE problem duplication/analysis as well as GPS Mission Planning and Search and Rescue capabilities that support the warfighter."**

**Paula O. Brandon,  
WRALC/LYSBG  
SBIR Project Officer**

## Air Force SBIR Update

Continued from front page...

opportunities for technology transition. The final recommendations will be aimed at providing enhanced return on investment to those organizations taxed to support the SBIR program. We will also use these changes as a baseline for a new Air Force policy directive and instructions.

### New SBIR Policy Directive

A new SBIR policy directive has been issued by the Small Business Administration (SBA). The directive revises the SBIR program adding statutory amendment and guidance on the general conduct of the program. Some of the changes include the requirement for small businesses to report detailed commercialization information. We recommend that any Air Force official involved in the administration and/or operation of the SBIR Program should review this new document. The policy directive can

be obtained at [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=2002\\_register&docid=02-24026-filed.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=2002_register&docid=02-24026-filed.pdf).

### Air Force Makes Leap Forward in Topic Approval

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### Outreach Update

#### National SBIR/STTR Conferences

As directed by SBIR policy guidance, outreach to qualified small businesses continues to be an essential element of the program. Each year several national SBIR conferences directed at recruiting new small businesses into the program are held throughout the country. The next national conference (Burlington Vt., October 28-31, 2002) will focus on helping small businesses commercialize their technologies. Future national conferences are scheduled for:

- Albuquerque, N.M.,  
March 10-13, 2003
- Washington, D.C.,  
April 22-24, 2003

For more information contact: [www.acq.osd.mil/sadbu/sbir/conferences](http://www.acq.osd.mil/sadbu/sbir/conferences).

### State Conference Participation

Recently 550 small business folks attended the state conference held in Virginia. Highlighting other upcoming outreach activities, in October the Air Force SBIR office will participate in state sponsored conferences held in Pennsylvania, Ohio and Tennessee. In December the SBIR program office will participate in SBIR briefings in San Antonio, Tx.; Baton Rouge, La.; Jackson, Miss.; Little Rock, Ark.; and Birmingham, Ala.

Air Force

**SBIR Advantage**

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The goal of the Air Force SBIR Program is to serve the technology needs of Air Force warfighters. It accomplishes its mission as part of the Air Force Research Laboratory's (AFRL) integrated research and development (R&D) team. AFRL's mission is leading the discovery, development, and integration of affordable warfighting technologies for our air and space force.

*SBIR Advantage* is published quarterly by the Air Force SBIR Program office. This publication offers an overview of AF SBIR issues and information. The purpose of *SBIR Advantage* is to provide Air Force, DoD, and other government leadership with additional insight into the vital contributions made by the SBIR program to Air Force R&D.

*SBIR Advantage* is available online at: [www.afrl.af.mil/sbir](http://www.afrl.af.mil/sbir)

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